STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 3, 2008

MEMO TO: Jay Bennett, Jonathan Bivens, Stuart Bourne, Jennifer Brandenburg, Judith Corley-Lay, Ron Hancock, Berry Jenkins, Don Lee, Michael Manning, Gerhard Pilcher, Dave Rankin, Ed Spencer, Michael Taylor, and Brian Webb

FROM: Victor Barbour, PE
State Project Services Engineer

SUBJECT: AGC/Roadway Subcommittee Meeting Minutes
April 17, 2008

The subject committee met on April 17, 2008 at 9:30 a.m. in the Riverwood Conference Room at the Century Center with the following in attendance:

Jay Bennett	Berry Jenkins	Norma Smith
Jonathan Bivens	Michael Manning	Eddie Spencer
Scott Capps	Travis Padgett	Michael Taylor
Judith Corley-Lay	Gerhard Pilcher	Brian Webb
Randy Garris	Dave Rankin	Dennis Wofford
Ron Hancock	Ted Sherrod	

The following items were discussed:

1. PLACEMENT OF ABC STONE ON SANDY MATERIAL

The Industry commented that in the eastern part of the state, embankments are built on very sandy soil. When placing ABC stone, the dump trucks cannot get through the sand without severe rutting. The Industry stated that after lengthy discussion with the Resident on a recent project, the contractor was finally allowed to put in a thin lift of ABC as a work pad and then place the ABC material. The question was asked if there was a way to clarify the use of a thin lift in the sand of the eastern part of the state. The Industry agreed to send Ron Hancock data on several projects (Wilmington Bypass, Wilson, and Jacksonville) to review. The Department stated that this process was called a "stabilization lift". The Department agreed to send out a joint letter or memo from

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT SERVICES UNIT
1591 MAIL SERVICE CENTER
RALEIGH NC 27699-1591

TELEPHONE: 919-250-4128
FAX: 919-250-4119

WEBSITE: WWW.NCDOT.ORG

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

Construction, Pavement Management and Geotech to address this issue. There was also discussion on segregation of the aggregate and the use of a stone spreader versus a dozer.

2. TURBIDITY SPECIFICATIONS

The Industry asked for clarification of how much of an increase of NTUs were permitted. The Department distributed the current Project Special Provision for Procedure for Monitoring Borrow Pit Discharge, which states *Water discharge from borrow pit sites shall not cause surface waters to exceed* ***50 NTUs in streams not designated as trout waters*** *and* ***10 NTUs in steams or reservoirs designated as trout waters.*** There was an illustration on the back of the sheet that further clarified the sites. Handout No. 1

3. CERTIFIED SUPERVISOR ON PROJECT

The Industry asked what necessary paperwork is required for the certified supervisor to maintain on the project. They cited that the supervisor's truck may be the only office on some projects. The Department replied that the Special Provision for Erosion & Sediment Control clarified the roles and responsibilities, at the request of the contractors. Inspections must be made weekly and after 1/2" rainfalls. The Contractor's Level II E&SC/SW supervisor is responsible for filling out the forms. The records must be kept on anything over an acre impacted. Instructions to the field personnel were sent recently encouraging the joint meetings. Handout No. 2

4. CONTRACT TIME GUIDELINES

The Department handed out the latest contract time guidelines. These guidelines have been updated to meet the *2006 Standard Specifications*. The Department requested that the Industry review and provide comments to Randy and Norma. The Industry members stated that they feel the centrally-let projects are working well. However, Bridge Management, Divisions and Purchase Order lettings are inconsistent with the Raleigh lettings. They felt that Bridge Management did a good job with setting floating dates. The Industry was requested to review and provide comments by May 17, 2008. (Norma will send out the guidelines electronically today.) After the comments have been received, reviewed and implemented if applicable, the Department will submit the Guidelines to FHWA, stating that the Industry had input into the final Guidelines. Handout No. 3

5. UTILITIES PAY ITEMS UPDATE

At the last meeting, there was a presentation by a subcontractor summarizing the problems encountered subsequent to change for utility pay items. By the next meeting, the Department anticipates having some satisfactory changes to present to the committee.

6. BID ALTERNATES UPDATE

As stated at the last meeting, some contractors are entering a zero in their bids when it is not meant as their bid for a specific pay item. According to the Specifications, zero is a valid bid. The Department anticipates completing a revised specification to clarify this issue by the next meeting.

7. SHOULDER BERM UPDATE

The Department announced that they have completed historical research on this issue, including a year-to-year cost basis. There has been a mixed reaction from Department personnel as to how widespread the problem actually is. The Industry said there were many solutions to get the foundation bed but there are no pay items to compensate for them. The Industry agreed to submit an informational package of the problem to Randy. The Department will meet internally to determine a course of action and then if appropriate take to the Implementation Committee for their input and approval.

8. OTHER BUSINESS

Feedback from Contractors on Private Surveyors – GPS

There has been a push from some surveyors to say contractors are not qualified to build models to control production. However, the contractor has to train surveyors because they do not know how to build the models. Berry said he met with the licensing board and the board agrees with the contractors.

9. REMAINING MEETING DATES FOR 2008

June 19 August 21 October 23 December 18

Note: All meetings will begin at 9:30 a.m. You may want to reserve all day for the meeting in case it runs long, or there is a need to make a field trip in the afternoon.

C: Ellis Powell, PE
Norma Smith
Scott Capps
Travis Padgett
Dennis Wofford

PROCEDURE FOR MONITORING BORROW PIT DISCHARGE:

2-20-07 SP1 G181

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

If during any operating day, the downstream water quality exceeds the standard, the Contractor shall do all of the following:

(A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or

(B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.

(C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.

(D) Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

During the Environmental Assessment required by Article 230-4 of the *Standard Specifications*, the Contractor shall define the point at which the discharge enters into the State's surface waters and the appropriate sampling locations. Sampling locations shall include points upstream and downstream from the point at which the discharge enters these waters. Upstream sampling location shall be located so that it is not influenced by backwater conditions and represents natural background conditions. Downstream sampling location shall be located at the point where complete mixing of the discharge and receiving water has occurred.

The discharge shall be closely monitored when water from the dewatering activities is introduced into jurisdictional wetlands. Any time visible sedimentation (deposition of sediment) on the wetland surface is observed, the dewatering activity will be suspended until turbidity levels in the stilling basin can be reduced to a level where sediment deposition does not occur. Staining of wetland surfaces from suspended clay particles, occurring after evaporation or infiltration, does not constitute sedimentation. No activities shall occur in wetlands that adversely affect the functioning of a wetland. Visible sedimentation will be considered an indication of possible adverse impacts on wetland use.

The Engineer will perform independent turbidity tests on a random basis. These results will be maintained in a log within the project records. Records will include, at a minimum, turbidity test

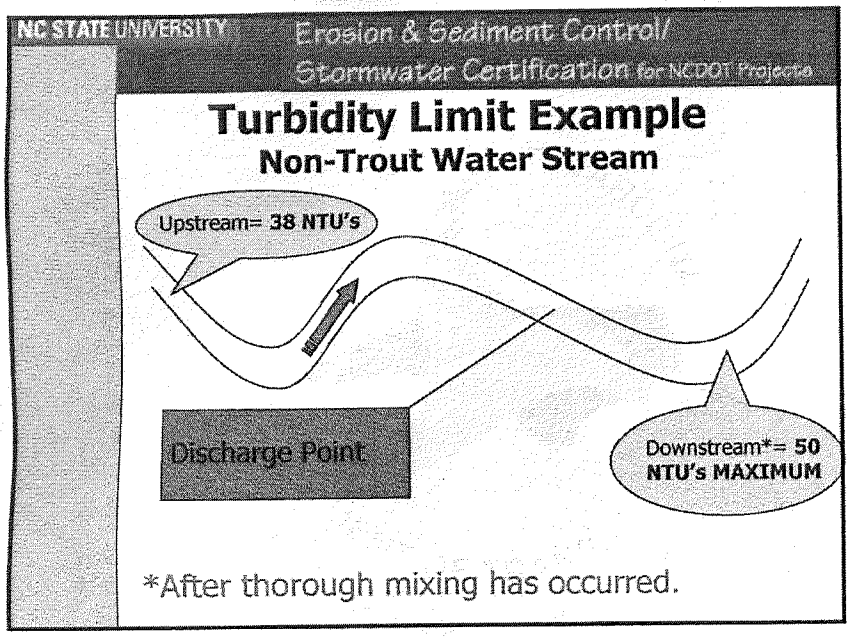
results, time, date and name of sampler. Should the Department's test results exceed those of the Contractor's test results, an immediate test shall be performed jointly with the results superceding the previous test results of both the Department and the Contractor.

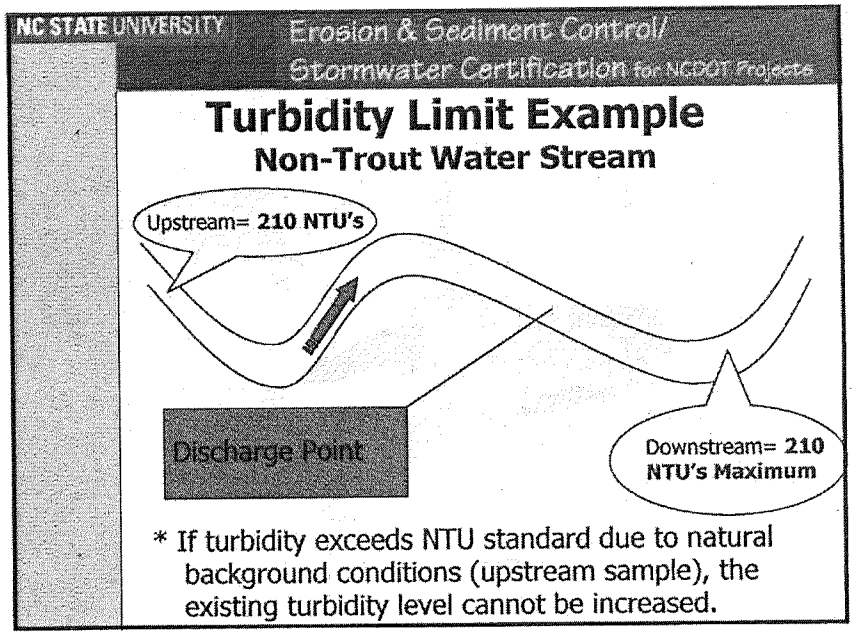
The Contractor shall use the *NCDOT Turbidity Reduction Options for Borrow Pits Matrix,* available at http://www.ncdot.org/doh/preconstruct/ps/contracts/letting.html to plan, design, construct, and maintain BMPs to address water quality standards. Tier I Methods include stilling basins which are standard compensatory BMPs. Other Tier I methods are noncompensatory and shall be used when needed to meet the stream turbidity standards. Tier II Methods are also noncompensatory and are options that may be needed for protection of rare or unique resources or where special environmental conditions exist at the site which have led to additional requirements being placed in the DWQ's 401 Certifications and approval letters, Isolated Wetland Permits, Riparian Buffer Authorization or a DOT Reclamation Plan's Environmental Assessment for the specific site. Should the Contractor exhaust all Tier I Methods on a site exclusive of rare or unique resources or special environmental conditions, Tier II Methods may be required by regulators on a case by case basis per supplemental agreement.

The Contractor may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the bid for the project. CEC values exceeding 15 milliequivalents per 100 grams of soil may indicate a high potential for turbidity and should be avoided when dewatering into surface water is proposed.

No additional compensation for monitoring borrow pit discharge will be paid.

Illustration is available on AGC Roadway Minutes for April 17, 2008 at http://ncdot.org/doh/preconstruct/ps/contracts/agcdot/roadwaysub.html


NC STATE UNIVERSITY
Erosion & Sediment Control/
Stormwater Certification for NCDOT Projects
Turbidity Limit Example
Non-Trout Water Stream
Upstream= 38 NTU's
Discharge Point
Downstream*= 50
NTU's MAXIMUM
*After thorough mixing has occurred.


NC STATE UNIVERSITY
Erosion & Sediment Control/
Stormwater Certification for NCDOT Projects
Turbidity Limit Example
Non-Trout Water Stream
Upstream= 210 NTU's
Discharge Point
Downstream= 210
NTU's Maximum
* If turbidity exceeds NTU standard due to natural background conditions (upstream sample), the existing turbidity level cannot be increased.

EROSION & SEDIMENT CONTROL/STORMWATER CERTIFICATION:

1-16-07 (Rev 1-15-08) SPI G180

General

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements herein regardless of whether or not a National Pollutant Discharge Elimination System (NPDES) permit for the work is required.

Establish a chain of responsibility for operations and subcontractors' operations to ensure that the *Erosion and Sediment Control/Stormwater Pollution Prevention Plan* is implemented and maintained over the life of the contract.

(A) *Certified Supervisor* –Provide a certified Erosion & Sediment Control Stormwater Supervisor to manage the Contractor and subcontractor(s) operations, insure compliance with Federal, State and Local ordinances and regulations, and to manage the Quality Control Program.

(B) *Certified Foreman* – Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.

(C) *Certified Installer* – Provide a certified installer to install or direct the installation for erosion or sediment/stormwater control practices.

(D) *Certified Designer* – Provide a certified designer for the design of the erosion and sediment control stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control stormwater plan.

Roles and Responsibilities

(A) *Certified Erosion & Sediment Control Stormwater Supervisor* - The Certified Supervisor shall be responsible for ensuring erosion and sediment/stormwater control is adequately implemented and maintained on the project and conducting the quality control program. The Certified Supervisor shall be on the project within 24 hours from initial exposure of an erodible surface to the project's final acceptance when questions or concerns arise with Erosion and Sedimentation Control/Stormwater issues. Perform the following duties:

(1) Manage Operations - Coordinate and schedule the work of subcontractors so that erosion and sediment/stormwater control measures are fully executed for each operation and in a timely manner over the duration of the contract.

(a) Oversee the work of subcontractors so that appropriate erosion and sediment/stormwater control preventive measures are conformed to at each stage of the work.

(b) Prepare the required weekly erosion control punchlist and submit to the Engineer.

(c) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.

(d) Implement the erosion and sediment/stormwater control site plans requested.

(e) Provide for erosion and sediment/stormwater control methods for the Contractor's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.

(f) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Contractor in jurisdictional areas.

(g) Conduct all erosion and sediment/stormwater control work in a timely and workmanlike manner.

(h) Fully install erosion and sediment/stormwater control work prior to suspension of the work.

(i) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment/stormwater control issues due to the Contractor's operations.

(j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces and/or any location where sediment leaves the Right-of-Way.

(k) Have available a set of erosion control plans that has been properly updated to reflect necessary plan and field changes for use and review by Department personnel as well as regulatory agencies.

(2) Requirements set forth under the NPDES Permit - The Department's NPDES permit outlines certain objectives and management measures pertaining to construction activities. The permit references *NCG010000, General Permit to Discharge Stormwater* under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated E&SC Program. Some of the requirements are, but are not limited to:

(a) Control project site waste to prevent contamination of surface or ground waters of the state (i.e. construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste).

(b) Inspect E&SC/Stormwater devices at least once every 7 calendar days, twice weekly for 303(d) impaired streams, and within 24 hours after a significant rainfall event of 0.5 inches within 24 hours.

(c) Maintain an onsite rain gauge and a record of rainfall amounts and dates.

(d) Maintain E&SC/Stormwater inspection records for review by Department and Regulatory personnel upon request.

(e) Implement approved reclamation plans on all borrow pits and waste sites.

(f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.
(g) Provide secondary containment for bulk storage of liquid materials.
(h) Provide training for employees concerning general E&SC/Stormwater awareness, the NPDES Permit requirements, and the requirements of the *General Permit, NCG010000.*
(i) Report violations of the NPDES permit to the Engineer who will notify the DWQ Regional Office within 24 hours.

(3) Quality Control Program - Maintain a quality control program to control erosion, prevent sedimentation and follow provisions of permits. The quality control program shall:

(a) Follow permit requirements related to the Contractor and subcontractors' construction activities.
(b) Ensure that all operators and/or subcontractor(s) on site have the proper erosion and sediment/stormwater control certification.
(c) Notify the Engineer when the required certified erosion and sediment/stormwater control personnel are not available on the job site when needed.
(d) Conduct the inspections required by the NPDES permit.
(e) Take corrective actions in the proper timeframe as required by the NPDES permit for problem areas identified during the NPDES inspections.
(f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch/seed or vegetative cover on a section-by-section basis.
(g) Maintain temporary erosion and sediment control devices.
(h) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.
(i) The Contractor's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.

(B) *Certified Foreman* - At least one Certified Foreman shall be onsite for each type of work listed herein during the respective construction activities to control erosion, prevent sedimentation and follow permit provisions:

(1) Foreman in charge of grading activities
(2) Foreman in charge of bridge or culvert construction over jurisdictional areas
(3) Foreman in charge of utility activities

The Contractor may request to use the same person as the Level II Supervisor and Level II Foreman. This person shall be onsite whenever construction activities as described above are taking place. This request shall be approved by the Engineer prior to work beginning.

The Contractor may request to name a single Level II Foreman to oversee multiple construction activities on small bridge or culvert replacement projects. This request shall be approved by the Engineer prior to work beginning.

(C) *Certified Installers* - Provide at least one onsite, Level I Certified Installer for each of the following erosion or sediment/stormwater control crew:

(1) Seeding and Mulching
(2) Temporary Seeding
(3) Temporary Mulching
(4) Sodding
(5) Silt fence or other perimeter erosion/sediment control device installations
(6) Erosion control blanket installation
(7) Hydraulic tackifier installation
(8) Turbidity curtain installation
(9) Rock ditch check/sediment dam installation
(10) Ditch liner/matting installation
(11) Inlet protection
(12) Riprap placement
(13) Stormwater BMP installations (such as but not limited to level spreaders, retention/detention devices)
(14) Pipe installations within jurisdictional areas

If a *Certified Installer* is not onsite, the Contractor may substitute a Level I Installer with a Level II Foreman, provided the Level II Foreman is not tasked to another crew requiring Level II Foreman oversight.

(D) *Certified Designer* – Include the certification number of the Level III-B Certified Designer on the erosion and sediment control stormwater component of all reclamation plans and if applicable, the certification number of the Level III-A Certified Designer on the design of the project erosion and sediment control stormwater plan.

Preconstruction Meeting

Furnish the names of the *Certified Erosion & Sediment Control Stormwater Supervisor, Certified Foremen, Certified Installers* and *Certified Designer* and notify the Engineer of changes in certified personnel over the life of the contract within 2 days of change.

Ethical Responsibility

Any company performing work for the North Carolina Department of Transportation has the ethical responsibility to fully disclose any reprimand or dismissal of an employee resulting from improper testing or falsification of records.

Revocation or Suspension of Certification

Upon recommendation of the Chief Engineer - Operations to the certification entity, certification for *Supervisor*, *Certified Foremen*, *Certified Installers* and *Certified Designer* may be revoked or suspended with the issuance of a *Continuing Immediate Corrective Action (Continuing ICA), Notice of Violation,* or *Cease and Desist Order* for erosion and sediment control/stormwater related issues.

Should any of the following circumstances occur, the Chief Engineer may suspend or permanently revoke such certification.

(A) Failure to adequately perform the duties as defined within the certification program
(B) Issuance of a continuing ICA, NOV, or Cease and Desist Order
(C) Failure to fully perform environmental commitments as detailed within the permit conditions and specifications
(D) Demonstration of erroneous documentation or reporting techniques
(E) Cheating or copying another candidate's work on an examination
(F) Intentional falsification of records
(G) Directing a subordinate under direct or indirect supervision to perform any of the above actions
(H) Dismissal from a company for any of the above reasons
(I) Suspension or revocation of one's certification within another state

Suspension or revocation of a certification will be sent by certified mail to the registrant and the Corporate Head of the company that employs the registrant.

A registrant has the right to appeal any adverse action which results in suspension or permanent revocation of certification by responding, in writing, to the Chief Engineer within 10 calendar days after receiving notice of the proposed adverse action.

Chief Engineer - Operations
1537 Mail Service Center
Raleigh, NC 27699-1537

Failure to appeal within 10 calendar days will result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified will result in a waiver of all future appeal rights regarding the adverse action taken. The registrant will not be allowed to perform duties associated with the certification during the appeal process.

The Chief Engineer will hear the appeal and make a decision within 7 days of hearing the appeal. Decision of the Chief Engineer will be final and will be made in writing to the registrant.

If a certification is temporarily suspended, the registrant shall pass any applicable written examination and any proficiency examination, at the conclusion of the specified suspension period, prior to having the certification reinstated.

Measurement and Payment

Certified Erosion & Sediment Control Stormwater Supervisor, Certified Foremen, Certified Installers and *Certified Designer* will be incidental to the project for which no direct compensation will be made.

AGC Roadway Subcommittee Handout

Contract Time Guidelines

for

Roadways and Structures

April 17, 2008 (rev)

CONTRACT TIME COMMITTEE

GUIDELINES FOR DETERMINING CONTRACT TIME

To calculate the contract time to be recommended to the Contract Time Committee, the number of work days must be determined. In estimating production rates and the number of work days required to do a certain phase of work, consideration is given to the following.

Weather conditions for that area of the state
Size of project in terms of quantities
Number of projects in the area
Availability of materials where material delivery time is the controlling operation
Special construction features or sequences
Degree of urgency of the proposed improvement as determined by the collective evaluation of management and those involved in planning, design, and construction
Staging and handling of traffic
"Time of year" restrictions for work that may be included in permits received from various agencies or included in Specification limits for temperature

Taking the above factors into consideration, a production rate is selected for each of the controlling operations. Using the production rate ranges below as a guide, production rates and overlapping operations are selected which reflect the consideration of the eight factors listed above. The total number of working days, thus computed, can be converted into a completion date by applying the following guides:

Allow 16 work days per calendar month for projects that are primarily of a type that the controlling operation would be delayed by wet weather or soil conditions. Allow 17 or 18 work days per calendar month for projects that are largely unaffected by wet weather or soil conditions or projects with an urgency for completion.

Additional contract time will be allowed delays caused by winter weather conditions. One, two, or three months additional contract time will be allowed for each winter period beginning December 15 for projects East of a line from Henderson to Charlotte. West of that line, three months additional contract time will be allowed for each winter period beginning December 15. Additional contract time allowed for winter working conditions may be reduced for projects or operations largely unaffected by winter weather conditions.

The maximum contract time for projects with "A+B" provision is determined on a nonaccelerated basis allowing the bidder to determine the most cost effective contract time.

Contract time for incentive payment is based upon higher production rates and will allow more than 16 days per calendar month.

Operations **Working Days**

Specification Limits to be Observed When Calculating Contract Time Periods

Statutes - Statutory legal load limits must be observed.

Clearing and Grubbing – No more than 17 acres of exposed, erodible surface area may be accumulated.

Grading

A. Truck hauled borrow is to be used when specified in special provisions.
B. Unclassified Excavation must be exhausted prior to borrow being utilized.

Structures

A. Concrete cannot be placed when air temperature is below 35° unless special measures are taken.
B. Painting can not be performed below 50°.

Pavement

A. Cement stabilized base or soil cement base cannot be produced when air temperature is below 40° or between November 1 and the following March 15, and shall be covered by pavement by December 1.
B. Prime coat cannot be placed when air temperature is below 40° for plant mix and 50° for AST.
C. Tack coat cannot be placed when air temperature is below 35°.
D. Asphalt Pavement Limitations

ACBC & ACIC	35°
ACSC, Types S4.75A, SF9.5A, S9.5B	40°
ACSC, Type S9.5C, D, S12.5C & D	50°
OGAFC	None to be placed between October 31 and April 1
AST	None to be placed between October 15 and March 16 except where overlaid with plant mix
Surface Course Final Layer	None between December 15 and March 16 if greater than 1" or between November 15 and April 1 if less than 1".

E. Portland Cement Pavement cannot be placed on frozen subgrade or base or when air temperature is 35° and falling but can be placed when temperature is 35° and rising.
F. Lime treated soil cannot be placed below 45° or between November 1 and the following March 15 and shall be covered by pavement by December 1.

General Items to be Considered

The high production rates are not used except on very large and lengthy rural projects. Items of work which can be performed concurrently with work which is considered a controlling operation will be considered to overlap, and no working days will be assigned for such overlapping work. With the many and varied types of Contractors bidding on these projects, production anticipated is based on the average size Contractor. If production were based on the least productive Contractor, the time limits would be too lengthy.

When projects are sent to field inspection, one of the questions asked is that is the Division's recommendation on contract time. Taking this recommendation into consideration, each project is analyzed by Proposal and Contract Section personnel, and the Assistant Head of Bridge Design, and where appropriate, by the Roadway Project Engineer. The calculations are shown on the form entitled "Recommended Contract Time."

(1) Nature or Scope of Project and Special Construction Features: Unique construction problems associated with maintaining traffic, long hauls, utilities, rock, and phasing of construction are all factors to be considered when assigning production rates.

(2) Urgency: Where a special traffic hazard is being corrected and the need for speedy improvement warrants the additional cost, the contract time is calculated for the most efficient Contractor.

Resurfacing and Surfacing

Roadway Operation	Rate Per Working Day
Asphalt Concrete Base Course	300 to 600 tons/day
Asphalt Concrete Surface Course	0.6" to 1" – 500 to 800 tons/day 1" – 500 to 1,000 tons/day
Asphalt Base Course for Widening or Leveling	100 to 400 tons/day
Asphalt Intermediate Course	500 to 1,000 tons/day
Asphalt Surface Course	500 to 1,000 tons/day
Asphalt Surface Treatment	5,000 to 10,000 SY/day
Manhole Adjustments	8 to 10/day

Grading & Paving Projects
(Grading Less Than 1,000,000 Cubic Yards)

Roadway Operation	Rate Per Working Day
Clearing and Grubbing	1 to 8 acres/day, not to exceed 16 working days (grading will govern after 16 days)
Excavation (Unclassified Ditch, Undercut & Borrow)	2,000 to 6,000 CY/day
Aggregate Base Course	1,000 to 2,500 tons/day
Chemical Stabilized Subgrade and Base	Show overlaps with paving except 12 work days for placement and curing (see Seasonal Limitations), additional time may be required when performed in phases
Asphalt Surface Treatment	5,000 to 10,000 SY/day
Asphalt Pavement	300 to 2,000 tons/day
Concrete Pavement	3,000 to 5,000 SY/day (1,000 to 1,500 SY/day for ramps)
Fine Grading	Show overlaps except 4, additional time may be required due to phases
Pipe	100 to 300 LF/day
Curbs and Curb and Gutter	100 to 500 LF/day
Guardrail	300 to 500 LF/day straight, 50 to 100 LF/day shop curved, additional time allowed for excessive amount of anchors
Fencing	500 to 1,000 LF/day
Seeding and Mulching	1 to 3 acres/day, not to exceed 16 working days (most seeding is performed concurrently with grading)

Major Urban and Rural Projects
(Grading in Excess of 1,000,000 Cubic Yards)

Roadway Operation	Rate Per Working Day
Clearing and Grubbing	1 to 10 acres/day, not to exceed 16 working days (grading will govern after 16 days, may not be valid unless all grading can be done at once and burned)
Excavation (Unclassified Ditch, Undercut & Borrow)	6,000 to 8,000 CY/day (adjust for rock at rate of 500 to 2,000 CY/day, truck excavation and hauling restrictions)
Aggregate Base Course	1,000 to 2,500 tons/day on mainline, 500 to 1,200 tons/day on Y-Lines and ramps, additional time may be required when performed in phases
Chemical Stabilized Subgrade and Base	Show overlaps with paving except 12 work days for placement and curing (see Seasonal Limitations), additional time may be required when performed in phases
Asphalt Surface Treatment	5,000 to 10,000 SY/day
Asphalt Pavement	800 to 2,000 tons/day on mainline, less than 800 on ramps and Y-Lines, additional time may be required when performed in phases
Concrete Pavement	3,000 to 5,000 SY/day (for ramps, use 1,000 to 1,500 SY/day, plus 2 days each for turnout tapers on diamond interchange ramps – 2 days each ramp)
Fine Grading	Show overlaps except 4, additional time may be required due to phases
Pipe	100 to 300 LF/day
Curbs and Curb and Gutter	500 to 1,000 LF/day on ML 200 to 400 LF/day on –Y- Lines
Drainage Structures	

20 to 50 each – show overlaps not to exceed 8, more than 50 each – show overlaps not to exceed 16

Major Urban and Rural Projects
(Grading in Excess of 1,000,000 Cubic Yards) continued

Roadway Operation	Rate Per Working Day
Guardrail	500 to 1,500 LF/day straight, 50 to 100 LF/day shop curved, additional time allowed for excessive amount of anchors
Fencing	1,000 to 2,000 LF/day (on most projects, fencing will overlap with grading time)
Seeding and Mulching	1 to 3 acres/day, not to exceed 16 working days (most overlaps with grading)

Small Rural Widening Projects

Roadway Operation	Rate Per Working Day
Clearing and Grubbing	1 acre/day
Excavation (Unclassified, Dr. Ditch, Undercut, Borrow)	200 to 400 CY/day
Aggregate Base Course	300 to 500 tons/day
Chemical Stabilized Subgrade and Base	Show overlaps with paving except 12 work days for placement and curing, additional time may be required when performed in phases (see Seasonal Limitations)
Asphalt Surface Treatment	5,000 to 10,000 SY/day
Asphalt Pavement	200 to 600 tons/day
Fine Grading	Show overlaps except 4, additional time may be required due to phases
Pipe	100 to 200 LF/day
Curbs and Curb and Gutter	100 to 300 LF/day
Guardrail	100 to 500 LF/day
Fencing	300 to 500 LF/day
Seeding and Mulching	1 to 2 acres/day, not to exceed 16 working days

Small Urban Projects – Grading and Paving (Widening and New Location)

Roadway Operation	Rate Per Working Day
Clearing and Grubbing	1/4 to 1 acre/day
Excavation (Unclassified, Dr. Ditch, Undercut, Borrow)	100 to 500 CY/day
Aggregate Base Course	200 to 500 tons/day
Chemical Stabilized Subgrade and Base	Show overlaps with paving except 12 work days for placement and curing, additional time may be required when performed in phases (see Seasonal Limitations)
Soil Type Base Course	200 to 500 CY/day
Asphalt Surface Treatment	2,000 to 5,000 SY/day
Asphalt Pavement	200 to 500 tons/day
Fine Grading	Show overlaps except 4, additional time may be required due to phases
Pipe	50 to 200 LF/day
Curbs and Curb and Gutter	100 to 300 LF/day
Guardrail	50 to 300 LF/day
Fencing	300 to 500 LF/day
Seeding and Mulching	1 to 2 acres/day

Paving Projects

Roadway Operation	Rate Per Working Day
Fine Grading	500 to 1,000 LF/day, show overlap except 8 for each phase
Aggregate Base Course	1,000 to 2,500 tons/day on mainline, if total quantity is over 40,000 tons, 500 to 1,200 tons/day on Y-lines and ramps
Chemical Stabilized Subgrade and Base	Show overlaps with paving except 12 work days for placement and curing, additional time may be required when performed in phases (see Seasonal Limitations)
Soil Type Base Course	2,000 to 3,000 tons/day
Bituminous Surface Treatment	5,000 to 10,000 SY/day
Asphalt Pavement	800 to 2,000 tons/day on mainline, less than 800 on ramps and Y-Lines
Concrete Pavement	3,000 to 5,000 SY/day (for ramps, use 1,000 to 1,500 SY/day, plus 2 days each for turnout tapers on diamond interchange ramps – 2 days each ramp)
Shoulder Construction	500 to 1,000 CY/day
Curbs and Curb and Gutter	500 to 1,000 LF/day
Guardrail	500 to 1,500 LF/, additional time allowed for excessive amount of anchors
Seeding and Mulching	1 to 3 acres/day, not to exceed 16 working days

Working Days Guidelines for Bridges:

- **Temporary Detour Bridge** – 10 days for 1st span and 7 days for each additional span. Indicate on the cover sheet when a Temporary Bridge is used as 48 calendar days will be allowed for design, submittal, and review of temporary bridge plans. Usually the detour structure is the controlling item to be completed before construction of the new bridge. (Do not include this 48 days in the computed time to construct the bridge.)
- **Unclassified Structure Excavation** - 500 cubic yards per day
- **Bridge Removal -timber bridge:** 1 day per span. Concrete deck on steel or PCG: 2 days per span, Concrete deck girder bridge: 4 or 5 days per span.
- **Temporary Access Construction and Removal** - 2 days for Causeway or Workpad, 4 days for Work Bridge based on 1000 square feet or less.
- **Footing Excavation per 2 Column Bent** - 1 day in soil. 5 days in rock. 10 days if cofferdam in water.
- **Form and Pour Footings** - Use 1 day per footing. More time is required for large footings or pile footings in water.
- **Columns: Forming and Pouring** - 2 days for 2-column bent. Add one day if taller than 25 feet. 4 days per pour for oval hammer head columns.
- **Drilled Piers ≤ 60" dia.** - Drilling in Soil 25 feet per day. Drilling Not in Soil 5 feet. per day. Add 1 day for set up, 1 day for preparation, and 1 day for pouring per 2-column bent.
- **Drilled Piers > 60" dia.** - Drilling in Soil 18 feet per day. Drilling Not in Soil 3 feet per day. Add 1 day for set up, 1 day for preparation, and 1 day for pouring per 2-column bent.
- **Drilled Piers with Slurry Construction** - 2 days per shaft including pouring. Add 2 days to 1st shaft for set up time.
- **Pile Driving** - For 6-10 piles per End Bent, Bent or Cluster of piles use 3 days for Concrete Piles, 2 days for Steel H-piles, 3 days for Steel Pipe Piles including pipe plug. Add 1 day for steel piles > 40'. Add 1 day for each PDA required.
- **Sheeting** - 640 square feet per day includes driving and extracting for salvage.
- Forming and Pouring Caps - **4 days for caps up to 40' long. Includes wing construction for end bents. Use 10 days for Hammer Head Caps.**
- Curing time for Caps - **Use 5 days (7 calendar days) for curing the last cap poured before placing steel or prestressed beams.**
- Rip Rap - **150 square yards (135 Tons) per day.**
- **Concrete Slope Protection** - 4 days average. 2 days minimum per end bent slope. Increase for wider bridges.
- **Placing Girders** - 1 day per span for PCG, 2 days per span for Rolled Beams, 1 day per span for cored slabs or box beams, 3 days per span for Steel Girders ≤ 6' deep. 4 days per span for

Steel Girders > 6'. Includes time for girder splices and diaphragm installation. Increase time for wide bridges.

- **Deck Forming Per Span** - 5 days for Simple Span on PCG or Steel Beams, 7 days for Continuous Steel girder or PCG spans. Add 1 day per span for concrete intermediate diaphragms. Applies to most bridges regardless of width due to overhang work controlling.
- **Deck Pour, Curing and Stripping** - 8 days per pour. Includes time for setting up screed, curing and stripping forms. Add 4 days for bridges with integral End Bents. Add 7 days for each additional pour for bridges with multiple pours (To allow concrete to reach minimum strength before next pour).
- **Concrete Overlays for Cored Slab or Box Beam Spans** - 8 days for 1 to 4 spans. For bridges with more than 4 spans, use 2 days per span.
- **Approach Slabs** - 8 days per slab (6 days per approach slab for 12' length) if no transition barrier rails used.
- **Expansion Joints** - 1 day per joint for Armored Evazote or Sawed Evazote with elastomeric concrete. 1 day per Expansion joint seal. 3 days for each Modular Joint.
- **Barrier Rails and Concrete Parapets**- 500 linear feet of rail per day if slip formed (200 linear feet per day if not slip formed). Add one (1) day if poured over traffic.
- **Metal Bar Rails** - 1 day per span for one or two bar rails. 2 days per span for three bar rails.
- **Sidewalk and Median Island** - 3 days per span for sidewalk, 2 days per span for median island.
- **Grooving Deck** - 1 day per span
- **Erosion Control** - 2 days for construction of erosion control devices for replacement bridges over stream crossing.
- **Utility Systems and closed drainage systems** - 3 days per 300 linear feet of bridge.
- **Rideability Testing and Corrective Work** - Used only for bridges over 1500 feet. 5 days for an average bridge. Must be done prior to joint construction. May keep joints from being concurrent with other work.
- **Railroad Bridge Adjustments** - Overpass (Road over Railroad) Add 50% to time associated with bridge demolition and girder erection. Add 10% to all other operations that take place within RR Right of Way. Underpass (Railroad over Road) - Increase time for substructure and superstructure by 50%.

- **Deck Rehab Overlay** -
  - ❖ Grinding: 115 square yards per day,
  - ❖ Latex Modified Concrete Overlay: 340 square yards per day,
  - ❖ Class II Patching: 20 square yards per day,
  - ❖ Cure patches: 5 days,
  - ❖ Cure overlay: 5 days.

Working Days Guidelines for Culverts:

- **Excavation** - 5 days for single barrel RCBC up to 70 feet based on an excavation rate of approximately 200 cubic yards per day. Varies depending on site condition and amount of excavation required, presence of rock and need for diversion channel. Time includes placement of Foundation Conditioning Material.
- **Forming** - 2 days for wing footing and bottom slab, 2 days for walls, 2 days for top slab for a single barrel culvert. Increase time by 1½ for double culvert, 2.0 for triple culvert and 2½ for quadruple culverts. (based on 70' long culvert)
- **Pouring Concrete** - 1 day for each pour. Increase for multiple barrel culverts (based on 70 foot long culvert).
- **Cure, Strip and Backfill** - 10 days for single culvert up to 70 feet.
- **Culvert Extensions** – Add 2 days to the above times to remove the existing wings and install dowels
- **Precast Culverts** - cast one unit per day, cure 5 days, deliver 1-3 per day, Setting units: 1 unit each 45 minutes.

Working Days Guidelines for Walls:

- **Retained Earth Walls** - Varies according to geometry of wall and shape of panels. Generally 400 to 1200 square feet per day. Average job rate is 800 square feet per day.
- **Soil Nail Wall** - 10 nails per day. Includes grouting of nails, Shotcrete and cast in place concrete. Use 3 days to form and pour 100 feet of cast in place (fascia) wall.
- **Pile Panel Sound Barrier Wall** – Drill 5 holes per day, set piles and pour concrete for 4 piles per day. Set 32 panels per day
- **Reinforced Earth Wall** - excavation: 200 cubic yards per day, prepare bed: 2 days for initial section, pour pad: 2 days, cure pad: 5 days, place panels: 500 square feet. per day, coping: 200 linear feet per day.